

COT 4930 ~~it~~ ~~ise~~ ~~in~~ ~~copy~~

~~Cu~~ 3 credits

~~Te~~ ~~lab~~ ~~ogr~~ : Computer Security: Principles and Practice (3rd edition), Stallings and Brown, Pearson

~~Re~~ ~~o~~ ~~is~~ Security in Computing (5th edition), Pfleeger, Pfleeger and Margulies, Pearson.
Introduction to Modern Cryptography (2nd edition), Katz and Lindell, Chapman & Hall/CRC.
Cryptography Theory and Practice (3rd edition), Stinson, Chapman & Hall/CRC.
Handbook of Applied Cryptography, Menezes, Oorschot, Vanstone, Chapman & Hall/C

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~~Co~~ ~~nt~~ ~~en~~ ~~t~~ This is a course on computer security and cryptographic algorithms. The following components are covered in the course: (a) Overview of computer security concepts (b) Computer security technology and principles, (c) Software security and trusted systems, (d) Management issues, (e) Cryptographic algorithms, and (f) Network security

~~Pr~~ ~~eq~~ MAD 2104 and COP 3014.

Knowledge of linear algebra, number theory and computer programming would be of great help. The instructor also reviews some of the necessary background materials

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The following concepts and topics will be covered with different levels of emphasis. Some topics will be covered in-depth and some other topics will be reviewed briefly.

1. Overview of Computer Security Concepts
2. Computer Security Technology and Principles
 - Cryptographic Tools
 - User Authentication
 - Access Control
 - Database and Cloud Security
 - Malicious Software (Trojans, Phishing, Spyware)
 - Denial-of-Service Attacks

- Intrusion Detection
- Firewalls and Intrusion Prevention Systems
- 3. Software Security and Trusted Systems
 - Buffer Overflow
 - Software Security
 - Operating System Security
 - Trusted Computing and Multilevel Security
- 4. Management Issues
 - IT Security Management and Risk Assessment
 - IT Security Controls, Plans and Procedures
 - Physical and Infrastructure Security
 - Human Resources Security
 - Security Auditing
 - Legal and Ethical Aspects
- 5. Cryptographic Algorithms
 - Symmetric Encryption and Message Confidentiality
 - Public-Key Cryptography and Message Authentication
- 6. Network Security
 - Internet Security Protocols and Standards
 - Internet Authentication Applications
 - Wireless Network Security